

WORK PLAN

**SEDIMENT INVESTIGATION /
REMOVAL WORK PLAN
DS TRIBUTARY**

DETREX RD/RA
SOURCE CONTROL AREA
DETREX FACILITY
ASHTABULA, OHIO
DOCKET NO. V-W-98-C-450

Prepared for
Detrex Corporation
Ashtabula, OH

June 2008



1375 Euclid Avenue
Suite 600
Cleveland, Ohio 44115
216.622.2400

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This sediment investigation and removal Work Plan addresses further sampling that needs to be conducted in the DS Tributary in order to make remedial decisions regarding additional sediment excavation that may be needed. This Work Plan has been prepared in response to correspondence from U.S. EPA received on March 27, 2008 regarding submittal of both an updated OM&M Plan for Source Control Activities and a Work Plan for the DS Tributary. Detrex and URS personnel met with USEPA on April 30 to discuss future plans for sampling and strategy for DNAPL recovery operations.

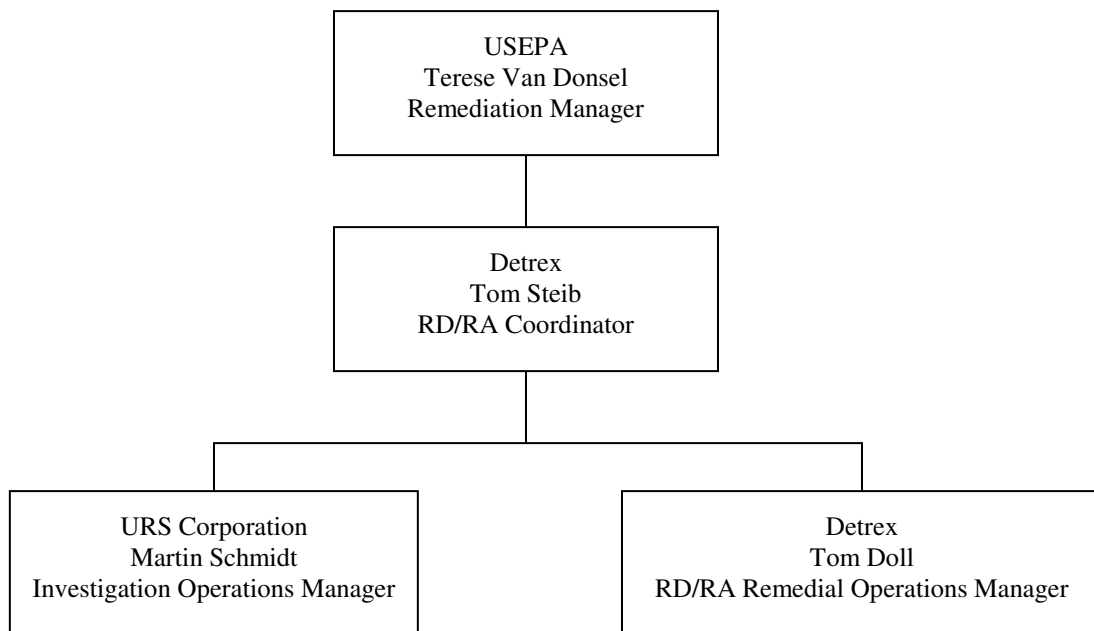
On October 25, 2005 Detrex submitted a Remedial Design/Remedial Action Work Plan to U.S. EPA for investigation of DNAPL releases in the northern area and southern area of the Detrex facility. In August 2006, additional geoprobe sampling was completed in the DS Tributary area both on Detrex property and offsite to the north and west. Results of this investigation were submitted to U.S. EPA in October 2006, for the northern area. Sampling results indicate the presence of impacted soil at depth in the DS Tributary area on Detrex property and to the north. DNAPL was not observed in any piezometers.

This Work Plan describes the sampling procedures that will be conducted to meet the criteria established in the Fields Brook sediment and floodplain Records of Decision and Explanations of Significant Differences for the DS Tributary. As requested by U.S. EPA, this Work Plan includes a reconnaissance survey/hand auger and exploratory trench excavation sampling program that will be conducted as part of the investigation phase, prior to excavation of impacted sediment or soil. These locations will be sampled at least three feet into clay underlying sediment and floodplain soils and deeper in areas where structures penetrate the underlying clay. Upon completion of the investigation phase, Detrex will initiate the excavation phase of work. In addition, this Work Plan includes reference to the updated Detrex Facility QAPP prepared in February 2007 and an updated HASP.

An Organizational Chart is provided as **Figure 1**.

Mr. Tom Steib of Detrex Corporation will be the main point of contact with U.S. EPA. URS Corporation will be providing sampling and technical assistance. Martin Schmidt will be the URS Project Manager. Terese VanDonsel will be the U.S. EPA Remedial Project Manager.

Figure 1



The first phase of work in the DS Tributary will involve investigative procedures to evaluate the vertical and horizontal extent of DNAPL in sediment and floodplain soils (if any) downstream of the Detrex facility. The sampling program will be completed upstream of the previously remediated portion of the DS Tributary. In 2001, a segment of the DS Tributary approximately 200 feet west of State Road was excavated and backfilled.

During the first phase of work hand augering, exploratory trench excavations and geoprobe borings will be used to assess and delineate impacted material. Upon review of field observations and analytical results, the second phase of work will include specific plans for sediment and soil removal that will be provided to U.S. EPA describing an implementation strategy. General procedures to be followed during sediment removal work in the DS Tributary that are based on work conducted in Fields Brook are described in Sections 4.0, 5.0, 6.0 and 7.0.

3.1 RECONNAISSANCE SURVEY AND HAND AUGER

Prior to commencement of field operations, the Ohio Utilities Protection Service (OUPS) will be contacted regarding the presence and location of underground utilities. Additionally, all boring locations will be reviewed and cleared by Detrex personnel familiar with Site operations.

Prior to sediment and soil sampling, a reconnaissance survey will be conducted along the entire DS Tributary. The purpose of this survey will be to locate areas previously remediated and document conditions of sediment in the stream channel in order to calculate potential volume of impacted material. During the survey, photographs will be taken to identify impacted areas. Also, due to conveyance pipes in the area carrying sediment from the Ashtabula River, the survey will identify access issues.

Upon completion of the reconnaissance, a hand augering program will be conducted. At this time it is expected that hand augering locations will be approximately 30-50 feet apart. At each location, a 3 ½ inch diameter hand auger will be advanced through sediment into underlying clay soil. The depth of sediment will be recorded and up to 10 sediment samples will be submitted for analytical testing. At each location the width of the channel will be recorded.

3.2 EXPLORATORY TRENCH EXCAVATION AND SOIL SAMPLING

Detrex proposes to excavate approximately 10 trench excavations along the DS Tributary channel. The trenches are located approximately 100 feet apart. The trench excavations will be excavated up to the stream channel and extend into the upland areas on both sides of the DS Tributary. The trenches will not extend into the stream channels. The length of the trenches is anticipated to be 10 feet on each side of the DS Tributary, in order to view the edge of the stream channel and adjacent stream banks. The trenches will extend to a depth of three feet into the clay and no more than six feet in total depth. All excavations will be performed using a backhoe. Due to location of conveyance pipes, the trenches may be segmented in length. Excavation spoils will be returned to the exploratory trench excavated. If DNAPL material is encountered it will be segregated, and stockpiled in a secure area. A qualified geologist will visually monitor excavation work and collect, classify and log soil samples using the Unified Soil Classification

System (USCS) in accordance with the American Society of Testing and Materials D2488-00 (ASTM, 2000). Proposed exploratory trench excavations are presented in **Figures 2A and 2B**.

3.3 FIELD SCREENING PROCEDURES

A 10.6 eV photo ionization detector (PID), manufactured by Rae Systems will be used to screen for the presence of VOCs in the headspace of soil samples. A maximum of two (2) samples will be submitted for laboratory analysis from each exploratory trench excavation. Selected sediment samples will be submitted from hand auger locations. Approximately 10 locations will be sampled at two depths. Sample selection will be based on headspace screening results and proximity to the top of the clay and till layers. Samples with the highest head space reading, as well as, the sample immediately above the top of the clay and/or till layer will be submitted to the laboratory for analyses from the exploratory trench excavations. The MiniRae will be calibrated as described in the Rae Systems *Instructions and Service Manual* using 100 parts per million (ppm) isobutylene. Calibration results will be recorded in the field logbook.

Headspace screening of soil and sediment samples will be conducted in the field in the following manner:

- After sample collection, each sample will be split in half. One-half is placed in a laboratory-supplied, 4 ounce glass container and with a Teflon-lined lid and placed in an iced cooler for potential submittal for laboratory analysis. The jar will be filled so that no head space is visible in the container.
- The other half is placed in a re-sealable plastic bag, sealed and vigorously shaken.
- Following a period of approximately 10 minutes for accumulation of organic vapors, the resealable plastic bag is again shaken. The MiniRae probe is inserted through a small opening in the plastic bag. The highest organic vapor concentration in the headspace of each sample container is then measured and recorded in the field log book.
- After screening, the portion of the sample subjected to headspace screening is placed with the borehole cuttings for disposal.

3.4 SAMPLE IDENTIFICATION

All analytical samples will be assigned a unique sample identifier. The identifier will be comprised of the following information:

- Sample Location (identification number, (i.e., DSTRIB-1),
- Sample Interval, Depth (02-04),
- Sample date, and
- Sample type (Environmental, Replicate, or Trip Blank).

3.5 LABORATORY ANALYSIS OF SOIL SAMPLES

Soil samples shall be analyzed for pursuant to the following Methods:

1. Volatile Organic Compounds (VOCs) by USEPA Test Method 8260
2. Semi-Volatile Organic Compounds (SVOCs / by USEPA Test Method 8270

Samples will be shipped to Firstech Laboratories of Cleveland, Ohio in an insulated cooler with ice under standard chain-of-custody protocol. The 2007 USEPA approved QAPP will be used. A copy is provided in **Appendix A**.

3.6 SITE SURVEYING

A location and elevation survey will be conducted using a GPS unit. The location and elevations of the ground surface elevations of all hand auger, trenches and borings will be surveyed and referenced to the site benchmark that is consistent with previously completed site investigations.

3.7 DECONTAMINATION PROCEDURES

All soil and sediment sampling equipment to be utilized will be decontaminated in the following manner:

1. The equipment will be rinsed with clean potable water,
2. Followed by an Alconox/water solution rinse;
3. Followed by a deionized water rinse.

If DNAPL is encountered the equipment will be rinsed with Methanol following the Alconox/water solution rinse.

3.8 SAMPLE HANDLING AND PACKING

Soil samples will be collected in order and containerized according to the volatility of the target analytes. The collection order of the analytes is as follows (where applicable):

- Volatile organics (VOAs or VOCs)
- Semivolatile organics (SVOCs)

Immediately following collection, samples will be placed in iced, insulated coolers. Samples will be packed in bubble wrap or equivalent material, placed in iced, insulated coolers and shipped to the approved laboratory via overnight courier. Proper chain of custody will be maintained during sample handling and shipping activities.

3.9 QUALITY ASSURANCE / QUALITY CONTROL

QC samples will be collected at the following frequencies:

1. Field Duplicates (D) – One (1) per 10 environmental samples collected or a minimum of one per sampling event.
2. Field Blank Samples (B) – One (1) per 20 environmental samples collected.
3. Trip Blank Samples (TB) – One trip blank will be included in each cooler container samples for VOC analysis,
4. Organic Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples – One (1) per 20 environmental samples collected, and

3.10 EQUIPMENT CALIBRATION

Instruments used to gather, generate or measure environmental data will be calibrated with sufficient frequency and in such a manner that accuracy and reproducibility of results are consistent with the manufacturer's specifications. Field measurement instruments will include one or more of the following: multi-parameter meter, pH meter, specific conductance meter, thermometer (or temperature probe), and electronic water-level indicator. As a rule, each field measurement instrument will be calibrated daily prior to use and the calibration checked every 15 samples.

Calibration procedures will be documented in the field records. Documentation will include the date and time of calibration, the identity of the person performing the calibration, the reference standard used, the readings taken, and any corrective action.

3.11 REPORTING

Upon receipt of analytical data from the hand auger, exploratory trenches and borings, a summary report will be prepared and submitted to USEPA prior to implementation of the second phase of the project. The report will include the following information:

- Photographs and observations from reconnaissance survey;
- Maps of sampling locations;
- Summary tables of analytical data;
- Proposed sediment / soil removal drawings; and
- Estimated volume of sediment / soil planned for removal.

In addition to site characterization sampling, select samples of impacted material will be characterized for waste disposal parameters. Upon receipt of data, Detrex will evaluate potential offsite disposal vendors and locations.

Stream diversions will be necessary to complete excavation in the DS Tributary. DS Tributary waters will be diverted upstream of the immediate work area and will rejoin the stream at a point immediately downstream of the work area. The diversions will remain in place until observations and sampling results have been received. Pending acceptable DNAPL removal, the section of DS Tributary will be restored, the diversion structures protecting that area will be removed, and stream flow in that area will be restored.

Dikes will be constructed of clean materials and will be built to ensure that excavation activities are performed "in the dry". Diversion piping for the channel flow will be installed outside the limits of the excavation area. Waters will be returned to the channel at a suitable location immediately downstream of the downstream dike. Pumps will be used to divert the water through the piping and will operate 24 hours per day during the excavation phases. The pump operation and stream flow will be monitored by an Operator 24-hours per day for any and all times that stream diversion is being implemented.

A backup pump shall be available onsite in the event of failure, maintenance or for surge capacity. Additionally, weather will be closely monitored and necessary provisions made to accommodate high stream flows related to storm events

The return segment of the diversion will utilize rip-rap and additional techniques necessary to minimize erosion of the stream bed. The diversion return will be regularly inspected for erosion or other problems.

Excavations will be completed at the end of each work day to the extent that all known contamination has been removed. Upon liquid DNAPL removal confirmation, the area will be restored and flow will be restored to the DS Tributary. Excavations will not be left open overnight, or during significant rain events (defined by if water accumulates in the excavation) with any known contamination remaining. This will be the control used to ensure that "contact" water does not collect in excavations. "Contact" water can include the following:

- Water that collects in excavation areas while contaminated soils are known to still be present; and
- Water that contacts contaminated soils in stockpiles, and water from decontamination of equipment or personnel.

5.1 STORM WATER DIVERSION

Controls to divert storm water away from excavation and work zones and staging areas will be implemented prior to commencing work. Specifics of controls will vary with the topography and needs of the area, but will include silt fence, rock check dams, filter fabric, berms, and trenches as needed.

5.2 WASTE WATER MANAGEMENT

Groundwater, surface water and rainwater contaminated by operations will be collected for proper treatment and disposal. All contact water will be transferred to a 1000 gallon tank located near the work area. The water from this tank will be decanted off the top (to allow sediments to settle) before transferring to the Detrex treatment system.

At this time, the following procedures for excavation activities are planned. A detailed Work Plan will be prepared prior to excavation using results from the investigation phases of work described in Section 3.0. Work will progress upstream to downstream along the DS Tributary. The area of soil and sediment removal will be clearly identified. A grid system will be utilized and will determine the depth of excavation per grid square. The grid system will be 10-foot for DNAPL areas that have been identified from the investigative phases of work. Work zones, access roads and support structures will be established and clearly identified with fencing and appropriate barriers and signage before any material, support, or diversion structures are constructed.

Excavation in the DS Tributary will begin when surface water controls and storm water controls are in place. Excavation will be performed in the following sequence:

- Excavation grids will be marked with survey markers;
- Decontamination pad and staging areas for roll off boxes will be constructed;
- Roll off boxes will be used to store impacted material instead of staging on ground surface;
- Surface water controls will be installed to divert surface water from excavation areas and stock piles.
- Excavate per Section 7 of this Plan, loading contaminated soils into a staging area and roll off box;
- Inspect excavated areas for evidence of liquid DNAPL;
- Complete excavations and remove all DNAPL from the DS Tributary at the end of each work day;
- Maintain excavation open and free of standing water until approval to backfill is provided; and
- Restore floodplain and DS Tributary to original contours and restore area's previous drainage patterns.

All excavation activities shall comply with local, state, and federal regulations, including OSHA.

6.1 WORK ZONES

Work zones including the "Support Zone" (SZ) "Contaminant Reduction Zone" (CRZ), and "Exclusion Zone" (EZ) specific to each activity will be established. The EZ is the designated area where contamination may be present. The CRZ is the designated area where decontamination is to occur. The SZ is the clean area outside these two areas. Control of access to these work areas will be maintained in strict accordance with the HASP. An updated HASP is provided in **Appendix B**. Temporary construction fencing, and/or orange construction fencing will clearly identify these zones.

EZ's will be established based on sampling results along the DS Tributary. These zones will provide a physical barrier to prevent any unauthorized personnel from entering these zones of

work. Limits of these areas will be established based on sampling results. Anticipated EZ's to be established are:

- Areas where known contaminated materials will be excavated; and
- Areas where contaminated soil will be stored.

6.2 EQUIPMENT

Haul roads will be constructed as needed.

6.3 CONTAMINATED SOIL CONTAINMENT

All soils containing liquid DNAPL will be placed into a lined roll off box container specifically intended for DNAPL soil disposal. The container will remain covered when not in use.

6.4 STOCKPILES AND FUGITIVE DUST

Clean soils removed from excavations will be placed into a stockpile. No liner is required for this stockpile, but erosion control measures will be required around the base of the stockpile. Soil erosion control measures will include silt fence and/or intercept trenches to prevent soil erosion and transport to adjacent areas.

Control of fugitive dust will be emphasized and regularly monitored. Water will be used proactively to suppress dust from exposed areas of stockpile during placement. Plastic liner covers will be used to suppress dust and to prevent erosion. Sandbags, or other suitable items, will be used to weigh down covers for stockpiles.

6.5 EQUIPMENT DECONTAMINATION

All vehicles and equipment entering the Exclusion Zone (EZ) will be decontaminated before leaving the site. A temporary decontamination pad will be constructed for this purpose.

Equipment decontamination will consist of the following:

- Removal of large debris chunks by mechanical means (scraping and brushing);
- Washing the undercarriage, tracks, and wheels with a power washer.
- Haul trucks will utilize full visqueen liners when transporting saturated materials or trucks must have a non-leaking reusable tailgate. No liquids are to leak from trucks leaving the site.
- Decontamination water will be collected and treated at the Detrex Site.

6.6 SPILL RESPONSE

All transportation subcontractors will have spill response contingency plans for handling spills ranging from small incidental releases, to large releases caused by overturns or breaches. Spills shall be cleaned up as soon as safe to do so and shall meet state and federal requirements. Off-site placarded vehicles shall follow federal and state notification requirements.

Upon completion of the investigative program described in Section 3.0 and preparation soil / sediment removal areas and volume estimates, the excavation of DNAPL-impacted soils and sediment in the DS Tributary will be performed.

7.1 DNAPL EXCAVATION

Any sediment that is identified within the DS Tributary stream channel that contains DNAPL will be removed. If soil is identified to contain DNAPL in upland areas then the following procedures will be used. These procedures are the same criteria used during DNAPL excavation in Fields Brook.

The default excavation area will be a 20 foot by 10 foot rectangle centered around the "hotspot" and extending laterally if additional traces of liquid DNAPL are present. The depth of excavation will extend into the clay a minimum of 1 foot (between 3 to 8 feet below ground surface). The actual excavation of these areas will be determined by moving laterally from the known "hotspots" and removing any visible liquid DNAPL.

Visual determination of the presence of liquid DNAPL will determine if additional excavation is required beyond the 20 x 10 foot grid. All soils containing liquid DNAPL will be moved directly to the lined container. Soils that are excavated that do not contain liquid DNAPL will be transferred to a stockpile area and inspected visually for the presence of liquid DNAPL. Any soils containing liquid DNAPL will be transferred to the roll off container, and all other soils will be used for backfill for the excavation. Backfill of excavations will not occur before the excavation and sidewalls have been open for at least 2 hours to allow the presence of liquid DNAPL to be observed.

The final excavation also will be surveyed using a PID. If liquid DNAPL is discovered along the sidewalls, further excavation laterally will be required. Excavation depth will not exceed 1 foot into the gray clay aquitard. When the excavation appears free of liquid DNAPL, the area will be considered ready for backfill and restoration.

All other soils will be set aside for use as backfill later.

7.2 DNAPL REMOVAL CONFIRMATION

The intention of the DNAPL excavations is to locate and remove liquid DNAPL. Any sediment containing DNAPL in the DS Tributary will be removed.

Soil samples from the excavation areas in the stream brook and upland areas will be monitored to identify the presence of DNAPL. Each excavation area will have four sample locations to identify the presence of DNAPL. Samples will be collected from side slopes and underlying gray clay soil at depths of approximately 4- 6 feet bgs.

8.1 DNAPL INTERCEPTOR TRENCH MONITORING

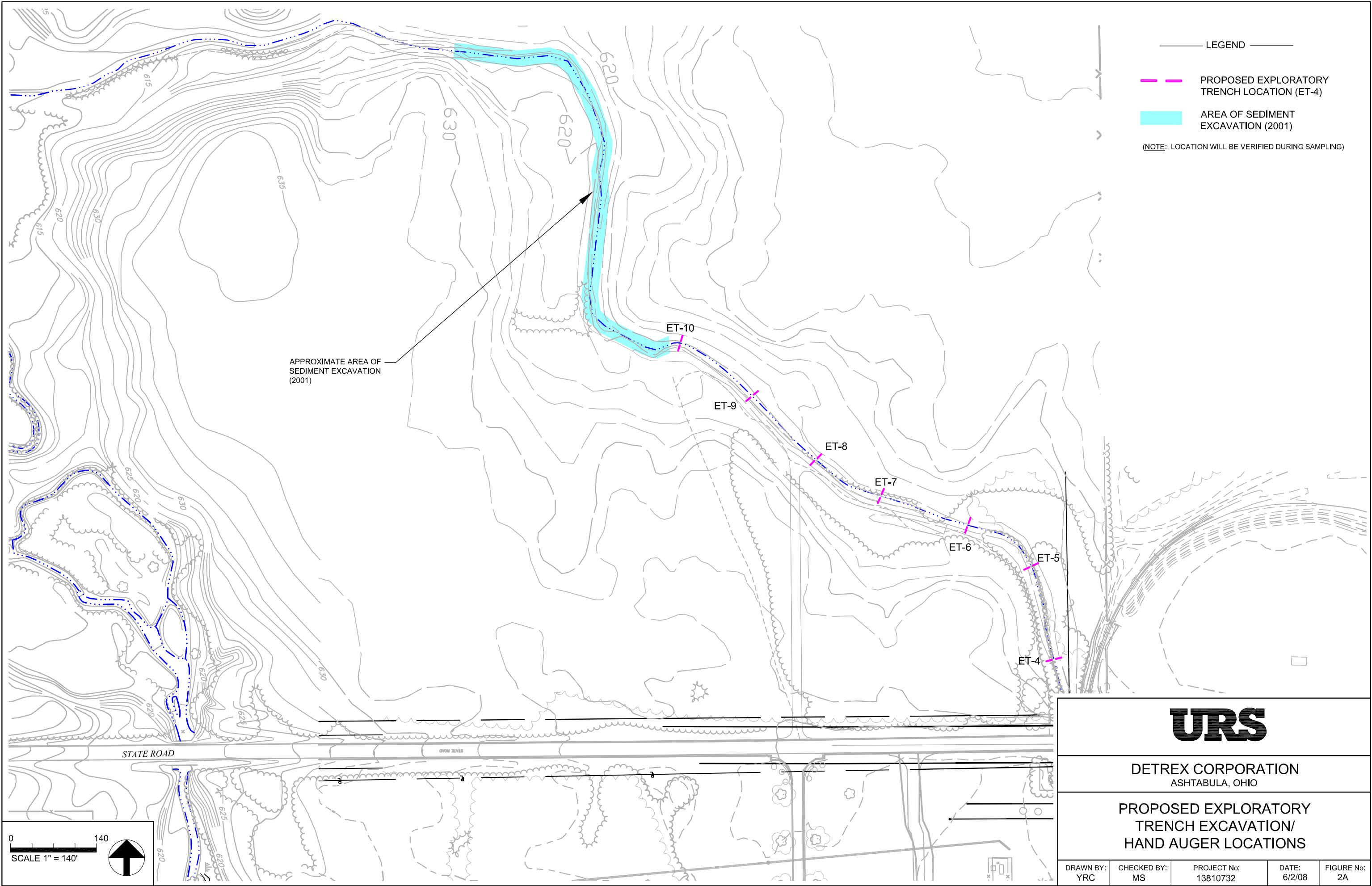
Upon completion of remedial activities within the DS Tributary, Detrex is proposing to install a DNAPL interceptor trench in the DS Tributary. The intent of the trench is to monitor potential DNAPL that may be in the channel near the State Road bridge. The trench will be excavated on the downstream side of the State Road bridge. It will be excavated to a depth of 5.0 feet and 3.0 wide. The trench will extend across the width with HDPE material and backfilled with gravel. An observation / sampling pipe will be installed in one end. The trench will be installed in the same fashion as other temporary trenches installed by FBAG in the DS Tributary in 2005.

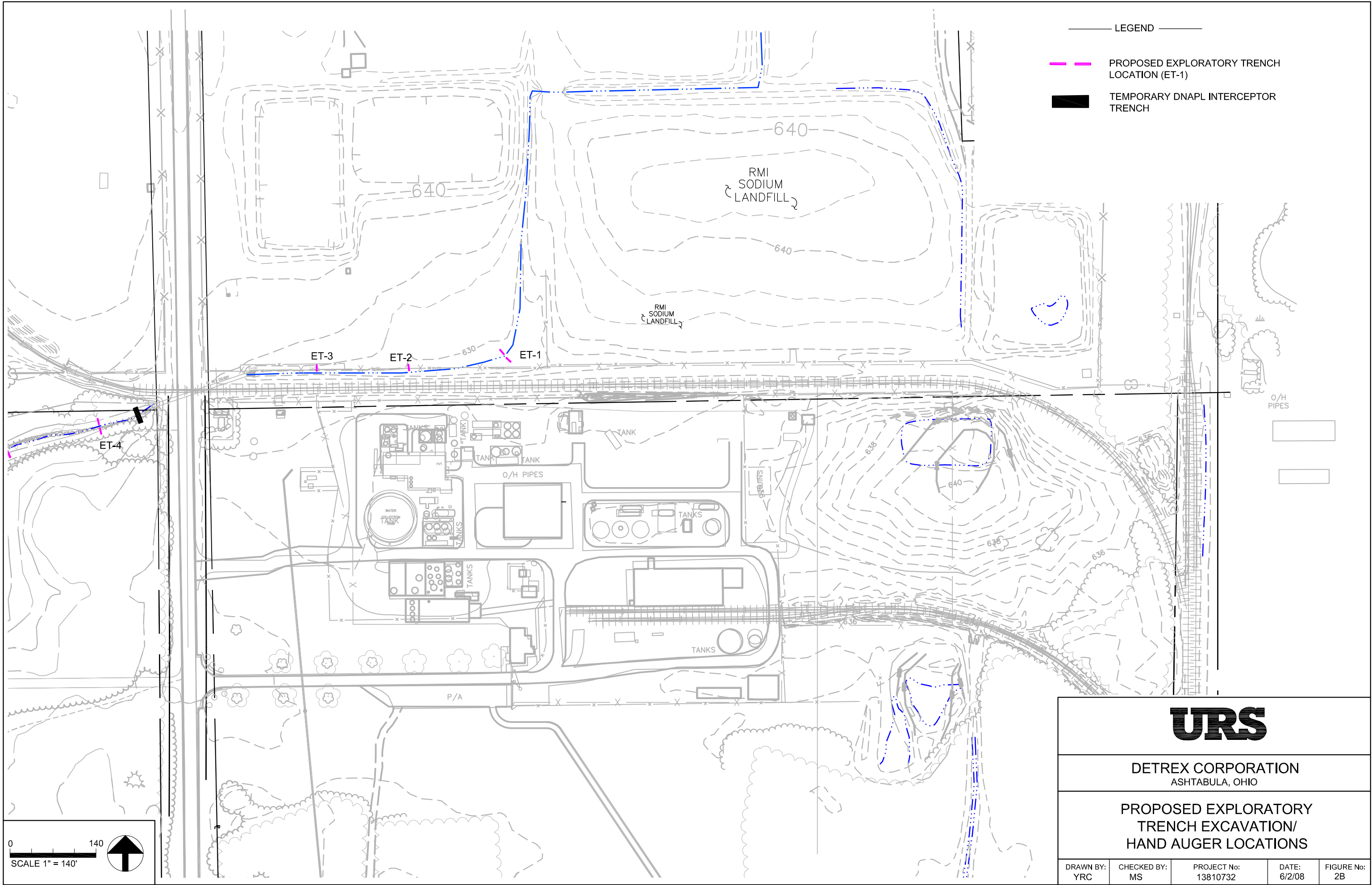
9.0 Section 9 NINE Schedule

In consideration of the need for additional verification of sediment and soil impact in the DS Tributary, the following schedule is proposed:

<u>Task Description</u>	<u>Data</u>
• Submit Delineation Work Plan to USEPA	June 6, 2008
• USEPA Approval (4 weeks)	July 2008
• DS Tributary Sampling (2 weeks)	August 2008
• Data Review and Reporting (4 weeks)	September 2008
• Submit Plans for DS Tributary Remediation to USEPA	September 2008

FIGURES





URS				
DETREX CORPORATION ASHTABULA, OHIO				
PROPOSED EXPLORATORY TRENCH EXCAVATION/ HAND AUGER LOCATIONS				
DRAWN BY: YRC	CHECKED BY: MS	PROJECT No: 13810732	DATE: 6/2/08	FIGURE No: 2B

APPENDIX A

APPENDIX B